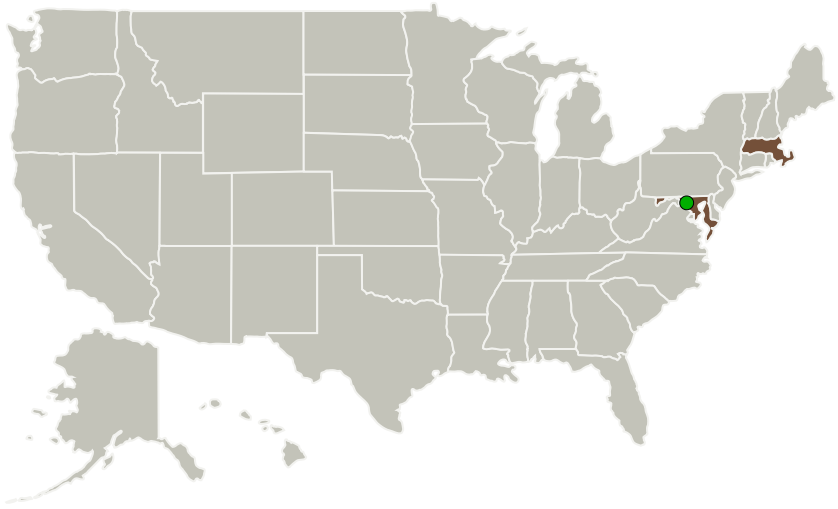
SHIMS -- A Spatial Heterodyne Interferometer for Methane Sounding, Phase I

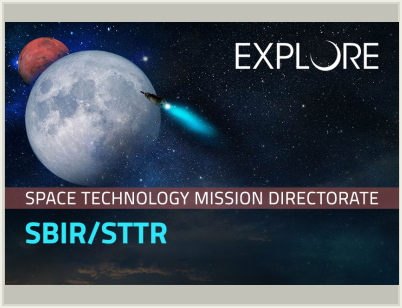
Completed Technology Project (2010 - 2010)

Project Introduction

This project develops the Spatial Heterodyne Interferometer for Methane Sounding (SHIMS), a lightweight, compact, robust spectrometer system for remote sensing of methane (CH4) via a series of absorption lines in the ~tetradecad~, over the range 1.6 to 1.7 microns. This instrument will be incorporated into a satellite package, and is capable of being scaled into a 2- to 3-U CubeSat payload size. The end result of this project will be: (1) a full nadir-viewing near IR spectrometer system, featuring the first-ever high-resolution monolithic Spatial Heterodyne Spectrometer for the near IR range; and, (2) a separate prototype of the first-ever SHS monolith with dedicated, built-in output optics which attach directly to the SHS monolith and to a detector via a standard c-mount adapter. This innovation will circumvent the need for the user to incorporate separate optics outside the monolith, making the unit even more end-user-ready.

Primary U.S. Work Locations and Key Partners





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Organizations Performing Work	Role	Type	Location
Scientific Solutions	Lead Organization	Industry	North Chelmsford, Massachusetts
Goddard Space Flight Center(GSFC)	Supporting Organization	NASA Center	Greenbelt, Maryland

Primary U.S. Work Locations	
Maryland	Massachusetts

Project Transitions

January 2010: Project Start

July 2010: Closed out

Closeout Documentation:

- Final Summary Chart*(https://techport.nasa.gov/file/139447)*

Organizational Responsibility

Responsible Mission Directorate:

Space Technology Mission Directorate (STMD)

Lead Organization:

Scientific Solutions

Responsible Program:

Small Business Innovation Research/Small Business Tech Transfer

Project Management

Program Director:

Jason L Kessler

Program Manager:

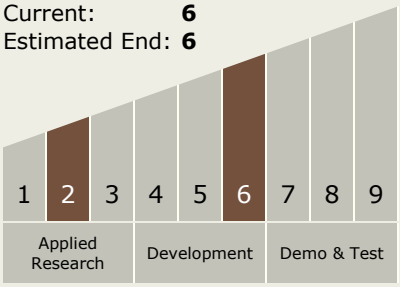
Carlos Torrez

Principal Investigator:

Steven R Watchorn

Technology Maturity (TRL)

Start: **2**
Current: **6**
Estimated End: **6**



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Technology Areas

Primary:

- TX08 Sensors and Instruments
  - TX08.1 Remote Sensing Instruments/Sensors
    - TX08.1.3 Optical Components

Target Destinations

The Sun, Earth, The Moon, Mars, Others Inside the Solar System, Outside the Solar System